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Lower Willamette Group

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January 16, 2004

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Re: Lower Willamette River, Portland Harbor Superfund Site
USEPA Docket No: CERCLA-10-2001-0240
Responses to EPA Comments on the Draft Round 2A Field Sampling Plan

Dear Chip and Tara:

Enclosed are the LWG's responses to EPA's November 6, 2003 comments on the Draft Round 2A Field Sampling Plan (FSP) for the Portland Harbor Remedial Investigation and Feasibility Study (RI/FS). The Round 2 Sediment Sampling and Benthic Toxicity Testing FSP for the Portland Harbor RI/FS incorporated EPA's November 6, 2003 alternate FSP approach, as modified during technical discussions between the LWG and EPA on December 10 and 12, 2003. Note that many of EPA's comments have been superceded by the LWG's adoption of EPA's alternate FSP approach, as modified. The LWG will respond to comments on surface water issues following review of EPA's surface water sampling approach that was received on December 19, 2003. A revised FSP for surface water sampling also will be developed.

If you have any questions, please call.

Sincerely,

Bob Wyatt
Co-Chair

Jim McKenna
Co-Chair

Chip Humphrey and Tara Martich
January 16, 2004

cc: Jim Anderson, ODEQ (with enclosure)
Eric Blischke, EPA (with enclosure)
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Valerie Lee, Environment International (with enclosure)
LWG Executive Committee
LWG Legal Committee
LWG Repository

LWG Responses to EPA Review Comments
Portland Harbor RI/FS Round 2A Field Sampling Plan

General Comments

1. *Proposed Work is Insufficient to Meet Project Goals - The proposed effort for sediment sampling and surface water sampling is insufficient to meet the project goals of identifying and characterizing the sources, nature, and extent of contamination, and supporting the human health and ecological risk assessments. EPA and its partners have developed a sediment sampling plan for Round 2 to meet these project goals that is attached.*

Response: The LWG has agreed to implement the alternative sediment sampling plan developed by EPA and its partners (as modified and refined by EPA, its partners and the LWG at the December 10 and 12, 2003 meetings). Because EPA and its partners developed this sediment sampling plan to meet the project goals of identifying and characterizing the sources, nature and extent of contamination and to support the human health and ecological risk assessments, the LWG understands that implementation of this plan will collect the majority of the sediment data necessary to complete the remedial investigation of the Portland Harbor Superfund site, including the human health and ecological risk assessments. The LWG believes it is important to point out that the Round 2A FSP proposed by the LWG represented the first phase of an iterative investigation that would also have met these project goals. We believe this accounts for a significant number of the differences between the LWG proposed Round 2A plan and the alternative developed by EPA and its partners. Those differences were further discussed and resolved in further discussions with EPA and its partners, resulting in an agreed sampling plan.

2. *Scope of Round 2- Round 2 should provide information to:*
   - *Identify direct and indirect continuing sources of significant contamination to sediments;*
   - *Assess what sources can be controlled by early actions;*
   - *Define the nature and extent of contamination in all media (sediment, groundwater, surface water, tissue, etc);*
   - *Update the conceptual site model to address temporal, physical, and chemical changes and assess if the contaminants that are currently available to receptors are likely to change in the future under various scenarios.*

The LWG places too much emphasis on the risk assessment process in Rounds 1 and 2, and not enough emphasis on defining the sources, nature, and extent of contamination, and obtaining the necessary information and data to develop a comprehensive site conceptual model (e.g., understanding of contaminant fate and transport in the system). It should be recognized that the RI cannot be complete until sources have been identified and characterized, and appropriate data collected to determine if they are or have contributed to the contamination in Portland Harbor.

Response: See response to General Comment 1. Further, the LWG believes that the stated

objective with regard to groundwater should be modified to: "Assess the nature and extent of impacts to sediment and surface water from groundwater."

3. *Sample Density- The FSP states "One of the objectives of Round 2A is to sample what are considered the worst-case areas to establish if unacceptable risks exist." The proposed sampling density and sample placement is not sufficient to meet this objective. A single sample adjacent to potential sources is unlikely to be "worst case" or representative of overall contamination at the site due to the complex, dynamic environment and limited knowledge of potential source areas. A much higher sampling density is needed adjacent to potential sources and in known in-water source areas. Furthermore, a higher sample density is needed to determine if there are significant undetected sources of contamination in the river.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

4. *Source Identification - While the LWG has presented substantial information regarding potential current and historical sources of contamination, very little sampling is proposed to identify new sources. The LWG relies almost exclusively on the existing sediment data for defining sources. The proposed approach will not be effective in identifying new sources, expanding the initial study area (ISA); or identifying potential in-water sources or hotspots. Potential known and historical contaminant sources should be identified and sediments in the vicinity of these potential sources sampled (e.g., over water facilities; outfalls).*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

5. *Total Petroleum Hydrocarbons - The work plan states that total petroleum hydrocarbons (TPH) are a chemical of interest for many potential source areas. However, TPH is not included as a standard sediment analyte. TPH is defined as a hazardous substance in Oregon and should be included in the analytical suite. For example, assuming that there is no risk to benthos in the absence of polynuclear aromatic hydrocarbons (PAHs) or benzene, toluene, ethylbenzene, and xylene (BTEX) may not be true, especially with other petroleum hydrocarbon fractions are high.*

Response: The LWG has concerns that TPH analyses may not be useful for the risk assessment. The LWG requests additional clarification on the objectives of this analysis, the specific analytical methodologies intended, and the intended agency use of the data. Pending these clarifications, the FSP has been revised to include TPH as an analyte at EPA-identified locations.

6. *Phasing- The FSP states that the Round 2A data will be submitted within 120 days after the Round 2A data collection, analysis, and validation effort is completed. What determines when analysis is completed? Does this refer to issuing of the final laboratory report or*

interpretation of the data's meaning?

Response: Sample analysis is complete when the final laboratory electronic data deliverable is received by the LWG. LWG data validation is complete 30 days from completion of sample analysis. The schedule for EPA data validation is best specified by EPA.

7. *Benthic Approach- The technical basis for the benthic approach proposed for Portland Harbor in the work plan, and subsequently the FSP, is incomplete. The benthic approach is described in a separate Technical Memorandum, dated May 20, 2003. Additional EPA comments on the proposed benthic approach are provided in the separate attachment (see Benthic Approach comments).*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

8. *Bioassay Testing: Testing Procedure and Analysis- Generic protocols are provided on proposed testing using the freshwater amphipod Hyalella azteca, and the freshwater midge, Chironomus tetans. However, details are missing that outline proposed analysis on the bioassay data including whether toxic sediments will be identified through comparisons with test controls or by using reference sediments, how each treatment is compared to the control or reference sediment (statistical analysis), and what level will constitute a hit or no-hit.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

9. *Ecological Risk Assessment - Characterization of receptor habitat to support the risk assessment needs to be completed. Designations of ecological habitat for shorebirds and amphibians were reviewed during a Portland Harbor site visit with members of the government team. Habitat was added where appropriate, and is being provided to the LWG in map form.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

10. *Use of Round 1 Data- There are several references in the Round 2A FSP to the results of Round 1 data. For example, on page 24, 1st paragraph it is stated that "a Round 1 sample in the same area was found to contain low to moderate metals and PAHs...". Since Round 1 data were not presented in the work plan or FSP, but were used in part to make decisions on sample placement, this information should be made available before the FSP is finalized.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has

been revised according to the negotiated approach.

11) *Spatial Comment- The lack of specific assessment endpoints in the RI Work Plan makes it difficult to review the FSP in order to determine if the characterization of habitat for receptors of concern is met. This may result in a disconnect between expectations and objectives of the ecological risk assessment between the LWG and the government/trustee groups. The assessment endpoints should be clearly stated in the programmatic work plan such that the FSP can be reviewed appropriately to ensure the proposed sampling meets those goals. For example, maps should be provided that include all potential habitat used by receptors of concern throughout Portland Harbor. Habitat should be mapped for each receptor including size and quality information, and local populations should be defined considering home range. Samples placed to characterize this habitat should be clearly presented.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

Specific Comments

1. *Page 1 - Sentences two and three of the first paragraph should be deleted. They are legal conclusions and not technical statements relevant to the technical document.*

Response: The FSP has been revised to address this comment.

2. *Section 1.1.2, p. 4 - Under "Fish and Shellfish Tissue and Sediment Chemistry" add the words "in aquatic organisms and" after "site-specific concentrations."*

Response: The FSP has been revised to address this comment.

3. *Section 1.1.2, p. 4 - Evaluation of Groundwater at Seeps - It is unclear how groundwater will be evaluated at seeps and related to the aquatic environment (pore water, surface water, and sediments). Evaluation of impacts may include pore water bioassay testing. Surface water may also need to be evaluated (in addition to sediment and pore water) where seeps exists.*

Response: This comment will be addressed in future submittals. The approaches for evaluating subaerial seep discharges and groundwater discharge below the river surface will be developed in groundwater pathway technical memoranda to be submitted to EPA during winter 2004. The details of how seeps and discharges of groundwater below the river surface will be sampled will be provided in a Round 2 groundwater impacts sampling FSP and a Round 2 seep sampling FSP, respectively. These FSPs will be submitted to EPA in the early summer 2004. Sampling to evaluate seeps and in-water groundwater discharges is anticipated to occur during the later stages of Round 2.

4. *Section 1.1.3, Page 5 – The objective of Round 2 sampling is "to gather the majority of the remaining data for the RI..." We disagree that Round 2A data should only have surface sediment chemistry "to characterize contaminant distribution." Round 2A data should also include subsurface chemistry to characterize contaminant distribution.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

5. *Section 1.1.3, p. 5 - Additional surface samples and subsurface samples are needed to characterize contaminant distribution and potential source effects to the river. An additional goal of the Round 2 sampling should be to characterize the nature and extent of in-river sources of sediment contamination. At the bottom of the page, additional beach samples likely are necessary along the residential properties on Sauvie island between river miles 2 and 3, and also adjacent to the Oregon Steel property. In addition, beach samples will be needed to evaluate shorebird habitat.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and

refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach. The beach sediment sampling plan for shorebirds and human health will be submitted as an addendum to the Round 2 Sediment Sampling FSP.

6. *Section 1.1.3, pgs. 5 and 6 - Subsurface Sediment Samples - Although the LWG addresses this issue, for the sake of clarity.....subsurface sediment samples will be needed to identify potential sources of contamination and to delineate the vertical extent of contamination.*

Response: The FSP has been revised to address this comment.

7. *Sections 1.1.3 (p. 5) and 1.2.1 (p. 8) - Round 2 Work - Round 2 should also include the following objectives:*

- *evaluate potential source areas (i.e., sample offshore of DEQ-targeted upland sites to determine if current or historical sources have impacted sediment quality);*
- *delineate local areas of contamination (i.e., hot spots);*
- *define the horizontal and vertical extent of contamination;*
- *collect adequate data to understand contaminant fate and transport in the river system; and*
- *collect adequate data to fill data gaps identified as a result of hydrodynamic modeling efforts.*

Response: The FSP has been revised to address this comment.

8. *Section 1.1.3, p. 6, first paragraph after bullets - Source Effects - The term "source effects" should be defined.*

Response: "Source effects" refer to the occurrence of chemicals in river media that may be attributed to specific upland or in-water sources.

9. *Section 1.1.3, p. 6 - A limited qualitative survey cannot be used to adjust quantitative information on fish ingestion in the baseline human health risk assessment. Unless adequate, local quantitative information could be obtained from a well-planned and -executed study, national consumption rates should be used in lieu of local data.*

Response: The LWG has concerns about this comment. Nevertheless, the FSP has been revised to address the comment. The bullet regarding a fish consumption survey has been deleted. Fish consumption rates for the Human Health Risk Assessment (HHRA) are under discussion with EPA and its partners.

10. *Section 1.1.3, p. 6, Round 2B objectives, first bullet - How will Round 2B fill data gaps in surface sediment chemistry from Round 2A? The sampling density proposed for Round 2A is unlikely*

to generate adequate information on nature, extent and source effects. Also, based on the data turnaround from Round 1, it is unlikely that Round 2B could occur prior to summer of 2004.

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

11. *Section 1.1.3, Page 6 – Subsurface sampling needs to have the following objective: subsurface sediment chemistry to characterize contaminant distribution and source effects to the river. The objective of subsurface sampling should not be qualified with "substantial historic releases are documented." Subsurface sampling is part of source identification and should be conducted at the same time as Round 2A, not after.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

12. *Section 1.1.3, p. 6 - Round 2B Work, Groundwater - This bullet should be revised to include characterizing the nature and extent of groundwater discharges and to evaluate impacts on sediments due to contaminated groundwater discharges.*

Response: "Evaluate impacts on sediments due to contaminated groundwater discharges" has been added as an objective of Round 2 sampling in Section 1.2

13. *Section 1.1.3, p. 6 - The Round 2B objectives should include:*
    - *identify the extent of subsurface contamination; and*
    - *identify buried sources of contamination that cause surface sediment or water exceedances (e.g., buried source of contamination flushed by clean groundwater).*

Response: This comment is addressed by the general objective for Round 2 of delineating the vertical and horizontal extent of contamination. Determination of whether or not buried sediment contamination results in surface water or sediment exceedances will be through the overall groundwater assessment approach to be developed with EPA.

14. *Section 1.1.3, p. 6 - Risk vs Impact - Evaluating the "impact" is mentioned several times in the bullets on page 6. It should be objective to evaluate the risk of chemicals of interest (COIs) discharging from upland areas to sediments, pore water and surface water.*

Response: "Impact" was used in this context to connote both nature and extent and risk. The data from activities described in the revised FSP will be used in conjunction with other stages of Round 2 data collection activities (to be described in separate FSPs) to assess the nature and extent of contamination and the risk to sediments, porewater and surface water from COIs in groundwater.

15. *Section 1.1.4, pgs. 6 and 7, Round 3 Work - Define Sediment Management Areas (SMAs) - The work plan and FSP should discuss what criteria will be used to define sediment management areas (e.g., risk, physical river system, contaminant, facility).*

Response: The SMA concept is defined and discussed in Section 8.6 of the November 13, 2003 Programmatic RI/FS Work Plan.

16. *Sections 1.1.4 (p. 7) and 2.1.1 (pgs. 11 and 12), Round 3 Work- Adequate Data in Certain Areas - The FSP states additional data will be collected to fill "substantial...uncertainties." It should be recognized that the sources, nature, and extent of contaminant must be fully defined during the RI/FS process. The FSP further states "If considered individually, many of these locations along the ISA have been adequately characterized, or nearly so, for their respective sources and COPCs".*

Response: The FSP has been revised to address this comment.

17. *Section 1.2, Pages 7-8, General Comment – Excluding the collection of subsurface sediment samples from Round 2A would not fulfill the objective of filling data gaps relating to site characterization.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

18. *Sections 1.2.1 (pgs. 7 and 8) and 2.1.2 - Sources of Contamination - In a number of places in the FSP, the LWG states that the purpose or objective of the RI is to investigate the nature and extent of chemical distribution in the in-water portion of the site (i.e., the nature and extent of contamination). The LWG's RI Work Plan and FSP neglects to include a discussion regarding the identification and characterization of sources of contamination. EPA's 1988 RI/FS guidance describes the importance of identifying and characterizing the source of contamination.*

It appears that the LWG's work plan and FSP assumes all the sources of contamination in Portland Harbor have been identified. Not all the sources of contamination have necessarily been identified in Portland Harbor. For instance, in Round 1, the LWG collected a grab sediment sample in RM 5-6 (Sample 05R040). The sample was collected in the channel portion of the river and not clearly associated with any upland or near-shore sediment contamination. The sample (05R040) was described as having "lots of oily sheen". The contamination may result from an over-water release, not associated with any upland or near-shore activities. The identification of contamination at location 05R040 is an example of how a more thorough search for sources of contamination is needed.

Knowledge regarding up-land activities, over-water activities, or historical use of a site should be considered in placing RI samples. The sampling approach proposed in Round 2 will not be

adequately effective in identifying new sources of contamination, evaluating whether the ISA should be expanded to define the site, or identifying potential in-water hot spots of contamination.

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

19. *Section 1.2.1, p. 8 - The first paragraph states that one reason for sampling sediments in nearshore areas is that these represent the most important exposures for human receptors; however, there is no plan to evaluate sediment chemistry for human exposures other than the beach samples collected in Round 1. Therefore, human exposure does not appear to be part of the rationale for sampling in nearshore areas.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

20. *Sections 1.2.1 and 2.0 - Site Characterization, Historical Data - Sampling locations should be selected based on an evaluation of all existing data (Category 1 and 2). If Category 2 data indicate the presence of contamination – additional sampling should be performed to obtain data evaluating potential sources, nature, and extent of contamination in that area. If the LWG proposes to utilize pre-1997 sediment data, then selected historical sampling stations must be reoccupied to demonstrate the historical data are representative of current conditions.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach. Selected historical sampling stations will be reoccupied during Round 2.

21. *Section 1.2.1, pgs. 8 and 9 - Site Characterization, Surface Water - The proposed surface water sampling effort is limited and the rationale behind the surface water investigation is unclear. The rationale for the transect approach, transect location, proposed sampling depth, and sampling methodology should be provided. What specifically is the proposed investigation going to tell us? How will the data be used? Additional sample locations and possibly sampling periods (i.e., samples collected at different seasons) will be needed to develop a reasonable characterization of surface water conditions that is suitable for the risk assessments.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

22. *Section 1.2.2, p. 9 - Bioaccumulation via surface Water - In addition to assessing direct toxicity to aquatic organisms, assessing bioaccumulation of chemicals from surface water into organisms should also be considered.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

23. *Section 1.2.3. p. 9 - In addition to targeting quiescent areas adjacent to beaches used by swimmers, surface water should be samples adjacent to beaches used by transients as these individuals are likely to have the greatest exposure to surface water.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

24. *Section 2.0, Page 11, – The sample density shown in Figures 2-1 is too sparse to be able to meet the objective of characterizing contaminant distribution.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

25. *Section 2.1.1, Page 11 –We do not agree that all data proposed as Category 1 are usable in the site characterization portion of the remedial investigation. Some Category 1 data may not be representative of current site conditions.*

Response: The FSP has been revised to address this comment.

26. *Section 2.1.1 - Data Needs - More Comprehensive Sampling Approach - The sampling approach presented in the FSP is not sufficient to "gather the majority of remaining data" (LWG, 2003) or to achieve the LWG's goal about completing the RI/FS by 2006. A much more comprehensive sampling approach is needed to achieve the RI objectives and to provide adequate data to complete the risk assessments and feasibility study.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

27. *Section 2.1.1, p. 12 - Early Actions and Source Control Activities - The FSP states "...to identify potential source areas. This information will be provided to EPA and DEQ for future source control activities." The LWG is responsible for addressing in-water Early Actions under EPA oversight and identifying areas of in-water contamination that need to be considered for future source control activities. It is unclear what is intended by the referenced statement.*

Response: The quoted statement referred to potential upland source control activities and has been removed from the FSP. With respect to early actions, the SOW provides that, "[d]uring implementation of the AOC, Respondents will recommend candidate early action ... criteria and evaluate how in-water portions of the Site meet those criteria in a memorandum for EPA review and approval. The AOC does not require Respondents to implement early actions." In its July 25, 2003 comments on the Programmatic Work Plan, EPA instructed the LWG to "delete the Early Action section from the Programmatic RI/FS Work Plan." Accordingly, the LWG is not currently planning further action to identify early action candidate sites. The LWG assumes that the sediment sampling program designed by EPA and its partners and reflected in the revised FSP will provide EPA information EPA needs for identification of potential early action areas. If this assumption is incorrect, it would be helpful to discuss the early action issue further to ensure that the approach is clearly understood by all parties.

28. *Section 2.1.1, p. 12 - Spatial Scale - Spatial scale is important in defining "spatial distributions of COPCs" relative to a risk assessment process. It is important that the spatial scale is defined and agreed such that the ability of the FSP to meet the objectives can be reviewed.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

29. *Section 2.1.1, p. 13, Habitat and Home Range of Ecological Receptors - It is stated that historical sediment stations were reviewed with "regard to spatial representation of shorebird habitat (exposed sediments), diving bird habitat (nearshore "bench" habitat"), and mink and raptor feeding habitat (open water in the ISA)". The assessment endpoints in the work plan were not complete enough to review whether these sampling points meet the assessment endpoints and objectives of the risk assessment. Clear maps should be presented outlining the habitat and home range of each receptor such that this information can be reviewed and agreed upon prior to reviewing a FSP. Based on a site visit by the internal Eco Subgroup, the proposed sampling locations are inadequate to properly assess receptors of concern in Portland Harbor. For example, additional beach area characterization for the sediment probing sandpiper is not proposed. Characterization should extend up to the mean high water line.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

30. *Section 2.1.2, p. 14, Proximity to Sources - The sediment sampling approach is not sufficient to evaluate known, suspected historic and ongoing sources of contamination. The sampling approach should at a minimum include source-specific samples to characterize the nature and extent of in-water contaminants. Sample locations should be selected based on site-specific sources and river dynamics in the vicinity of the source.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

31. *Section 2.1.2, p. 15 - The sediment sampling locations proposed in the FSP are inadequate to better understand the nature and extent of chemicals in previously uncharacterized areas. Despite the reported attempt to place samples closer together in areas with notable historic industrial operations, this distance is not close enough to reasonably determine potential source effects to the river.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

32. *Section 2.1.2, p. 15, Sediment Transport Areas - Selected sediment sample locations should be selected based the assumed or modeled river dynamics. Sediment cores should, in part, be selected in particular areas to evaluate model assumptions.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

33. *Section 2.1.3, Page 16, – Ninety-five sediment sampling locations will not be sufficient to characterize the site, even as an initial step.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

34. *Section 2.1.3, p. 17, Near-shore Sampling - It is stated that to "support a Round 2A objective of conducting a biased sampling program that will enable preliminary risk estimates to be based on worst-case scenarios, the majority of samples in Round 2A are located in nearshore areas". This should be clarified. Nearshore areas are closer to the sources (upland facilities), but it is within the nearshore areas of the river that the majority of the receptors of ecological concern also live and forage. Therefore, these areas have the highest potential for complete exposure pathways. This may not be "worst case" at all, but simply more realistic.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

35. *Section 2.1.3, p. 17, Sampling at Tier 1 Sites - The concept of greater sampling density in nearshore areas off DEQ Tier 1 sites is good. However, the number of sampling locations proposed appears to be inadequate to meet the objectives of the RI.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

36. *Section 2.1.3, Page 18, Nearshore RM 2-3 – Five sediment sampling locations will not be sufficient to characterize River Mile 2 to 3. In addition, we disagree with the statement, "[a]dditional sampling along the shoreline of OSM is not necessary to meet the objectives of Round 2A." Data have not been presented that proves the following statement: "[t]he existing data off the OSM outfalls are considered to be probable worst-case areas." What is "probable" based on?*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

37. *Section 2.1.3, p. 18, Nearshore of RM 2-3, Downstream of the ISA - An additional task for this segment of river as described above is the collection of beach sediment samples from residential properties that are along the river front. Although this area is somewhat erosional, the potential for regular contact with beach sediments by residents elevates the concern in this area. Additionally, because of potential beach use by residents, surface water samples should be collected adjacent to residential properties.???*

Response: The LWG is reviewing the agencies proposed shorebird/HHRA beach sediment sampling approach. A beach sediment sampling plan for shorebirds and human health will be submitted as an addendum to the Round 2 Sediment Sampling FSP. The LWG will respond to the surface water portion of the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

38. *Section 2.1.3, p. 18, Sediment Sampling at Oregon Steel Mills (OSM) - The FSP states "OSM conducted extensive sampling adjacent to their outfall...s" – The sediment sampling was performed to determine if the outfalls were a source of contaminants to the river. The investigation was not designed to define the nature and extent of contamination. Additional characterization is needed to define the nature and extent of contamination at this facility.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

39. *Section 2.1.3, Page 19, Nearshore RM 3-4 – Twelve sediment sampling locations will not*

be sufficient to characterize River Mile 3 to 4, which includes the International Slip.

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

40. *Section 2.1.3, Page 19, Table 2-3 and Figure 2-1 – Text and figure show that Sample #17 is to be located off the Georgia Pacific property and not Owens-Corning as indicated in the table. One sample that is located "immediately off one outfall and downriver of another" is not sufficient to characterize this area.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

41. *Section 2.1.3, Sample Placement - It is unclear whether decisions regarding the placement of bioassay samples was based on the comparison to sediment screening levels or on qualitative information. In some parts of the Round 2A FSP, sample placement is justified by statements such as "existing data suggest potentially elevated PAHs and metals" (page 20), while other statements are specific as to why they were selected including "this area has elevated metals concentrations that exceed PECs". Please clarify.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

42. *Section 2.1.3, Page 20, Nearshore RM 3-4 – One sample (Sample #15) is not sufficient to characterize an area that stretches for over a quarter mile, even if "given the apparent lack of industrial activity at this site" which was not further described other than the above statement.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

43. *Section 2.1.3, Page 20, Nearshore RM 3-4 – One sample is not sufficient to fill the data gap at Time Oil "where existing data do not include all analytes of concern for the facility." Locate more samples here.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

44. *Section 2.1.3, Page 20, Nearshore RM 3-4 – Three samples are not sufficient to characterize a slip (with differing operations on either side) which is approximately 2,000 feet long." More samples need to be placed here.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

45. *Section 2.1.3, Page 20, Nearshore RM 3-4 – We disagree that one sample is sufficient to characterize approximately 2,000 feet of shoreline at Schnitzer Steel.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

46. *Section 2.1.3, Page 20, Nearshore RM 4-5 – Eleven sediment sampling locations will not be sufficient to characterize River Mile 4 to 5.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

47. *Section 2.1.3, Page 20, Nearshore RM 4-5 – Collecting two samples, one at the head and one at the mouth of Slip 1 (at Terminal 4) is not sufficient. There is still the lack of understanding for temporal changes within the river and slips, even if these locations are based on "historical data, to be the part of the slip with the highest chemical concentrations."*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

48. *Section 2.1.3, Page 21, Nearshore RM 4-5 – We disagree that more samples are not necessary between Stations 23 and 26. The concept that this area is "erosional and not well suited for sampling" appears to be based on preliminary physical studies and the inappropriate use of these results will not sufficiently characterize the potential contamination.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

49. *Section 2.1.3, Page 21, Nearshore RM 4-5 – The LWG has not provided evidence that "there is a lack of sources" between Terminal 4, Slip 3 and RM 5. This stretch of river is approximately 2,000 feet and needs to be characterized.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

50. *Section 2.1.3, Page 21, Nearshore RM 4-5 – Four stations are not sufficient to characterize the nature and extent of contamination along the western side of the river between RM 4 and 5.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

51. *Section 2.1.3, Page 21, Nearshore RM 5-6 – According to the text, one station is proposed for the Terminal 4 Toyota Auto Storage Area; however, no stations were located on the figure or the table that indicates that there is such a sample location. One sample location is not sufficient to identify whether there exists any potential contamination along this operation, which is approximately 3,500 feet of riverfront. Part of the RI/FS is to identify potential overwater sources and sampling results from "off outfalls" is not sufficient. LWG has not presented sufficient data to state "it is highly unlikely that areas between these outfalls would have elevated concentrations given the lack of sources."*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

52. *Section 2.1.3, Pages 21-22, Nearshore RM 5-6 – One sample location is not sufficient for the Marcom facility and for properties upriver of the facility. LWG states that sampling results collected by the facility and the City should be available soon, but there are no assurances that their data will meet all the RI/FS quality objectives and analytes.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

53. *Section 2.1.3, Page 22, Nearshore RM 5-6 – The absence of nearshore sampling at the Mobil Oil Terminal is not acceptable. There is no discussion whether Category 1 data for all analytes are available. There is no discussion of any Category 2 data results in comparison to Category 1 data. In addition, four nearshore sample locations are not sufficient for the west bank of the river between River Miles 5 and 6. The statement that "[t]he shoreline near both Stations 38 and 39 is vegetated and lacks human-made structures that could be related to potential sources" appears conclusive prior to the presentation of historical information for the properties and collection of any samples. Please discuss the presence (or absence) of historic tank farms in this area.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

54. *Section 2.1.3, Page 22, Nearshore RM 5-6 – One sampling station (Station 40), one Category 1 data point (no discussion whether data includes all chemicals of interest and how it compares to Category 2 data) and one Round 1 sample for 2,000 feet plus of shoreline is not appropriate or acceptable. The same type of comment applies to reasoning for Station 42 and the absence of samples between Station 42 and River Mile 6. We disagree with the conclusion that "additional samples are not warranted."*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

55. *Section 2.1.3, Page 22, Nearshore RM 6-7 – Fourteen stations are not sufficient to characterize the nature and extent of contamination between RM 6 and 7. Three of these fourteen stations are located within or adjacent to McCormick & Baxter which is in the cleanup phase. The nature and extent of contamination is characterized for this site, and sampling density along the river should more closely match the amount of sampling for the McCormick & Baxter site, which occupies approximately 2,000 feet of riverfront. Besides McCormick & Baxter, this river mile contains an outfall from Aventis (Rhone-Poulenc), Wacker Siltronic, Gasco and Willamette Cove.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

56. *Section 2.1.3, Pages 22-23, Table 2-3 and Figure 2-1 – Samples #55 and #56 appear to be within the proposed sediment cap, one of the remedies specified for the McCormick & Baxter Superfund site. These sample locations should be moved to areas that have less characterization data and are not in a cleanup process, which would be of a higher priority.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

57. *Section 2.1.3, p. 23, Contaminants of Potential Concern - The FSP should be revised to indicate the cyanide, benzene, and naphthalene are primary contaminants of potential concern for the upland investigation for the Gasco and Wacker sites. In addition, volatile organic compounds (VOCs) are of interest at the Wacker site. Contaminants of potential concern at Atofina include DDT, DDE, hexavalent chromium, VOCs, and perchlorate.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and

refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

58. *Section 2.1.3, p. 23, Investigation at Gasco - The FSP states "Gasco is conducting extensive investigatory work in the vicinity or its facility" and that "With the addition of the Round 2A samples, there will be more than sufficient number of samples to characterize this section of the river. DEQ disagrees with these statements. The first statement is misleading Gasco (a.k.a., NW Natural) did expand its RI investigation onto the Wacker property about a year ago to define the nature and extent of contamination associated with its historical operations. However, Gasco has only performed limited in-water investigations; no in-water work has been conducted since the Spring of 2001.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

59. *Section 2.1.3, Page 23, Nearshore RM 6-7 – We disagree with the statement, "[a]dditional samples along this shoreline are not warranted to meet project objectives." Sampling is necessary in Willamette Cove.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

60. *Section 2.1.3, Page 23, Nearshore RM 6-7 – Discuss the "considerable existing data set for sediment chemistry along the west side of the river from RM 6 to 7." Please describe in detail the results of the chemicals of interest and the number of samples for each chemical.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

61. *Section 2.1.3, Page 23, Nearshore RM 6-7 – Describe in detail the "extensive investigatory work in the vicinity of its facility" being conducted by Gasco, including the sample locations and results.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

62. *Section 2.1.3, Page 23, Nearshore RM 6-7 – Two samples proposed for Round 2A will not provide the additional samples to have "more than sufficient number of samples to characterize this part of the river." Unless the data from Gasco's "extensive investigatory work" is produced and approved for use, two samples are not sufficient.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

63. *Section 2.1.3, Page 24, Nearshore RM 7-8 – Seven stations are not sufficient to characterize the nature and extent of contamination between RM 7 and 8.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

64. *Section 2.1.3, Page 24, Table 2-3 and Figure 2-1 – Sample #60 is within the McCormick & Baxter Superfund site. This sample location should be moved to an area that has less characterization data, which would be of a higher priority.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

65. *Section 2.1.3, Page 24, Nearshore RM 7-8 – Two samples on the east side of the river for this river mile are not sufficient, one of which is at McCormick & Baxter. There are no sample locations proposed for the Triangle Park property or for the University of Portland bluff. There is no discussion whether Category 1 data for all analytes are available for these areas and no data presented that indicate the absence of any overwater sources. In addition, there is no discussion of any Category 2 data results in comparison to Category 1 data.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

66. *Section 2.1.3, Page 24, Table 2-3 and Figure 2-1 – Five samples on the west side of the river for this river mile are not sufficient. There is no discussion whether Category 1 data for all analytes are available in sufficient density to characterize the area. In addition, there is no discussion of any Category 2 data results in comparison to Category 1 data. This river mile has several sites of concern including ATOFINA, Willbridge Terminal and McCall Oil/Great Western Chemical. In addition, Sample #64 appears to be located off the McCall Oil property and not Willbridge Terminals as stated in the table.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

67. *Section 2.1.3, Page 25, Nearshore RM 8-9 – There is no discussion whether Category 1*

data for all analytes are available in sufficient density to characterize the Cascade Shipyard and Swan Island Lagoon. In addition, there is no discussion of any Category 2 data results in comparison to Category 1 data. Without sufficient information, more sample locations would be needed to characterize this area.

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

68. *Section 2.1.3, Page 25, Nearshore RM 8-9 – Seven samples for the main stem of the river for this river mile are not sufficient. There is no evidence given that allows for the statement "[a]dditional samples do not appear warranted." There is no discussion whether Category 1 data for all analytes are available in sufficient density to characterize the area. In addition, there is no discussion of any Category 2 data results in comparison to Category 1 data. Three samples are not sufficient to characterize approximately 2,000 feet of shipyard property. Moreover, additional sample locations are necessary along another 2,000 feet of Swan Island waterfront to identify potential sources.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

69. *Section 2.1.3, Pages 25-26, Nearshore RM 8-9 – On the west side of the river, one sample off the Glacier Northwest property and one sample off the Lakeside Industries property is not sufficient. The absence of sampling at the Front Avenue properties, Shaver Transportation property and Equilon dock is not sufficient. Two samples in this river mile for the Gunderson property, which has released chlorinated solvents to the river, are not sufficient. There is no discussion whether Category 1 data for all analytes are available in sufficient density to characterize the area. In addition, there is no discussion of any Category 2 data results in comparison to Category 1 data.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

70. *Section 2.1.3, Page 26, Nearshore RM 9-10 – Potential sources, including any historical overwater sources upstream of the ISA should be sampled. Two samples will not suffice. This area should be gridded and sampled at a higher density. In addition, several samples are needed in the vicinity of several sites, some above RM 10, such as Goldendale Aluminum, the Union Pacific Railroad Albina Yard, the outlet of Tanner Creek, Port of Portland's Terminals 1 and 2, Sulzer Bingham Pump, and Ashgrove Cement.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has

been revised according to the negotiated approach.

71. *Section 2.1.3, Page 26, Navigational Channel Sampling – We disagree with the conclusionary statement, "much is known about the navigation channel's transport regimes." Two bathymetry surveys completed within a half-year may not be representative of the physical system of the river. This type of statement should not be made until more data are available.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

72. *Section 2.1.3, Page 27, General Channel Station Rationale – Round 2A sampling needs to have as its focus an identification of sources and the nature and extent of contamination. The focus of Round 2A cannot solely be "determining where unacceptable risks occur." Delete or modify this statement.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

73. *Section 2.13, p. 27, Rationale for Evaluating General Channel Conditions - The FSP states "...it must be reemphasized that the overall Round 2A surface sampling program is focused on determining where unacceptable risks occur, and the nearshore sampling program is biased toward likely source areas as worst-case estimates of risk." Too much emphasis is being placed on the risk assessment process, and not enough emphasis on defining the sources, nature, and extent of contamination, and understanding the contaminant fate and transport in the system. A single sample adjacent to potential sources is unlikely to be "worst case" or representative due to the complex, dynamic river environment and limited knowledge of potential source areas. A much higher sampling density is needed adjacent to potential upland sources and within in-water source areas. The sampling density and sample placement proposed in the FSP is not sufficient to complete the RI.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

74. *Section 2.1.3, Pages 27-30, General Channel Station Rationale – Channel sampling needs to occur at a higher sample density. In addition, there is no discussion whether Category 1 data for all analytes are available in sufficient density to characterize the area nor discussion of any Category 2 data results in comparison to Category 1 data.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

75. *Table 2-3 and Figure 2-1, Page 29 – Sample #43, which is described as a channel sample, is located more closely to Marine Finance. This sample location appears to be important due to the visual observation of "oily sediment during Round 1." Therefore, additional channel sample locations will be necessary.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

76. *Section 2.1.5 and Table 2-3, Pages 29-30 – Butyltins need to be sampled near several other potential sources (with additional sample locations) such as near: ACF Industries, Schnitzer, Marcom, Marine Finance, Brix Maritime, Willamette Cove, Triangle Park, Portland Shipyard, Lakeside, Equilon (Shell and Texaco) and Gunderson.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

77. *Section 2.1.5 and Table 2-3, Pages 29-30 – VOCs need to be sampled near Premier Edible Oils, Northwest Pipe, Brix Maritime, Wacker, Rhone Poulenc and Willbridge.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

78. *Section 2.1.5 and Table 2-3, Pages 29-30 – Dioxins/PCBs and chlorinated herbicides/pesticides need to be included in some samples off site of Wacker to characterize the nature and extent of contamination from the Aventis site.*

Response: The comment was superceded by the alternate FSP approach developed by EPA and refined at the December 10 and 12, 2003 meetings between EPA and the LWG. The FSP has been revised according to the negotiated approach.

79. *Sections 2.1.5 (p. 30) and 4.6.1 (p. 47), Sediment Sample Analyses - The FSP should be revised to state that an Oregon registered geotechnical engineer or geologist will interpret geologic conditions and select appropriate samples for geotechnical testing.*

Response: The FSP has been revised to address this comment.

80. *Section 2.1.5, p. 30 Additional Analytes - Total petroleum hydrocarbons should be added to this section.*

Response: See response to General Comment 5.

81. *Section 2.2.1, Page 31 – It is difficult to delineate which surface waters to which swimmers are exposed; therefore, all samples, including those close to the sediments, may need to considered in an evaluation of human health risk. A similar conclusion should be drawn in the case of aquatic organisms with respect to the ecological risk assessment.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

82. *Section 2.2, Page 31 – Surface water samples should be collected when sheens are observed when sediment samples are collected.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

83. *Sections 2.2.1 and 2.2.2, p. 31, and Round 2A QAPP Addendum, Water Column Chemistry for Ecological Risk Assessment - One of the objectives stated in the RI Work Plan was the use of a food web model in the preliminary risk evaluation (PRE) and baseline ecological risk assessment (BERA). This will require the collection of water chemistry appropriate for model parameterization, and should be included in Round 2 sampling. Sample number and placement should correspond with areas identified as amphibian habitat by this work plan or a site visit by the government team. In addition, general characterization of surface water for the river, including the main channel, is needed to assess water exposure for other ecological receptors.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

84. *Section 2.2.1, p. 31- For transient use, intentional ingestion of surface water should be added as a potentially complete exposure pathway.*

Response: The HHRA approach includes intentional ingestion of surface water as a potentially complete exposure pathway for transients (see Section 5.3.2 of Volume 1 and Section 3.3.2.1 of Appendix C in the revised Programmatic Work Plan submitted November 13, 2003).

85. *Section 2.2, p. 31, Water Column Chemistry - The proposed surface water sampling program is insufficient to meet the objectives of the RI. The rationale for the transect approach, their location, the proposed sampling depth, and the sampling methodology should be provided. What specifically is the proposed investigation going to tell us and how will the data be used? The FSP or work plan should specifically discuss alternative sampling methodologies (e.g., high volume sampling; SPMDs) considered? Was the OSU semi-permeable membrane device*

(SPMD) data considered in developing the sampling approach (e.g., locations, depths, methods)? Additional transacts should be included in the proposal.

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

86. *One of the goals of the surface water effort should be to assess potential contaminant inputs into the river (e.g., stormwater outfalls, permitted process discharges, groundwater discharge; tributaries; upstream or adjacent nonpoint sources) on sediment and surface water quality.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

87. *Section 2.2, p. 31, Water Column Chemistry - The FSP states that surface water chemistry is needed in generalized areas of the ISA to develop an understanding of the chemicals present. We are concerned that the LWG's proposal to characterize surface water chemistry may only characterize general conditions in the ISA, but will not necessarily characterize conditions in areas where surface water may be significantly contaminated (e.g., close to near-shore source areas, in areas of contaminated groundwater discharge, etc.). We are also concerned that these potential areas of localized surface water contamination (i.e., those areas where surface water may be significantly contaminated) may be diluted and masked by general ISA conditions.*

The LWG partially addresses our preceding concern by proposing to collect surface water quality samples near recreational beaches (to address human exposure) and in quiescent areas (to address early life-stage amphibians). However, LWG's effort should, in addition to their FSP surface water quality sampling proposal, include collecting surface water quality samples in areas where surface water may be significantly contaminated.

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

88. *Section 2.2.4, p. 33, Filtered Surface Water Samples for Metal Analyses - The FSP states that filtered surface water samples will be analyzed for metals. Given the suspected update (incidental ingestions and dermal contact), why should the surface water samples be filtered? Because ingestion is a risk, we do not think filtration is appropriate.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed. In the draft Round 2A FSP, both filtered and unfiltered samples were proposed for

metals analysis of water samples.

89. *Section 3.3, Page 38 – LWG needs to coordinate the field sampling activities also with tribal representatives, particularly because of cultural resources.*

Response: The FSP has been revised to address this comment.

90. *Section 4.2, p. 41, Sediment Stations - It is stated that during the proposed sediment grab sampling, locations may be moved due to obstructions. Are there some areas where samples need to be taken, which may require the use of alternative equipment? In subsequent text on page 45, Section 4.6.1, it states, "all samples will be collected within 10-15 meters of the target sampling location".*

Response: The FSP has been revised to address this comment.

91. *Section 4.5.1, p. 44, Decontaminating the Grab Sampler - The FSP states that the grab sampler will be rinsed with site water between stations. If the sampler encounters visibly contaminated sediment, the sampler should be thoroughly decontaminated before sampling at a new station.*

Response: The FSP has been revised to address this comment.

92. *Section 4.5, Page 45 – The surface water decontamination procedures mentions soaking tubing overnight in nitric acid. Will tubing not be disposable?*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

93. *Section 4.6.1, p. 46, Washing Fine-Grain Sediment Out of Sampler - The referenced text states that the retrieval rate for the power grab will be low enough to prevent disturbance of the sampled sediment surface. Will the power grab have any cover or other device to minimize loss of fine-grain material during retrieval?*

Response: The FSP has been revised to address this comment. The power grab sampler has a cover.

94. *Section 4.6.1, p. 46, Sediment Collection - It is stated that "once the sampler is brought on board, it will be placed on the sieving stand". In addition, a 6μm sieve is listed under "tools" in the sediment sampling checklist, in Appendix B. However, it is not clear from the FSP how and when sieving is proposed to be used. Sieving is not recommended because it can substantially change the physicochemical characteristics of the sediment sample (EPA, 2001). For example, wet sieving of sediment through fine mesh (<500μm openings) has been shown to result in decreased percent total organic carbon and decreased concentrations of*

polychlorinated biphenyls (PCBs), which might have been associated with fine suspended organic matter lost during the sieving process. Sieving can also disrupt the natural chemical equilibrium by homogenizing or otherwise changing the biological activity within the sediment (EPA 2001).

Response: The FSP has been revised to clarify that sediment samples will not be sieved.

95. *Section 4.7, p. 50, Waste Disposal and Investigation Derived Waste (IDW) - Section 4.5.1 of the FSP states that the decontamination of sediment sampling equipment will include a rinse with methanol or ethanol. Appendix C (Surface Sediment Sampling SOP) states that a hexane rinse may be used to decontaminate sediment sampling equipment. Section 4.7 of the FSP states that phosphate-free, detergent-bearing, liquid IDW will be washed overboard or disposed into the sanitary sewer system. The FSP does not describe how the waste solvent rinse (and other decontamination waste fluids) will be disposed. It should be disposed of in the sanitary sewer.*

Response: The FSP has been revised to address this comment.

96. *Section 4.7, p. 50, Waste Disposal - Any oily or obviously contaminated investigation derived waste should be placed in appropriate containers, a waste determination made, and disposed of at an appropriate facility.*

Response: The FSP has been revised to address this comment.

97. *Section 5.1.1, page 55 – Total petroleum hydrocarbons need to be added to the analyte list.*

Response: See response to General Comment 5.

98. *Section 7.0, page 60 – The Round 2A Site Characterization Summary Report should also in its evaluation include integration of data with Round 1 data. Results should, at a minimum, be presented in both tabular and GIS format.*

Response: Round 2 results will be provided in the draft remedial investigation report, results will be presented in both tabular and GIS formats.

99. *Section 7.0, p. 60, Reporting - The proposed reporting schedule should be based on completion of discrete events (e.g., field sampling, submittal or samples to laboratory; receipt of preliminary laboratory reports). What determines when "sampling and analyses" is completed? Does this refer to issuing of the final laboratory report or interpretation of the data's meaning?*

Response: See response to General Comment 6.

100. *Tables 2-1 and 5-2, Volatile Organic Compound (VOC) Analysis in Surface Water -*

VOCs should be included in the list of surface water analytes."

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

101. *Table 5-1, Round 2A Sediment Analyses - Consideration should be given to analysis of sulfides, ammonia, pH profiles, and redox potential in selected samples.*

Response: Sulfides and ammonia analysis was added to all bioassay samples. EPA has not responded to LWG requests for clarification of what is desired for pH profiles and redox potential.

102. *Table 5-2, Round 2A Water Analyses - Consideration should be given to analysis of general water quality parameters including: magnesium, calcium, sodium, potassium, iron, bicarbonate, carbonate, nitrate, chloride, sulfate, phosphates, and ammonia in selected samples.*

Response: The LWG will respond to the comment following receipt and review of EPA specific comments on surface water sampling. At that time, a revised FSP for surface water sampling will be developed.

103. *Appendix A – The Sample Depth Evaluation is based on the bathymetric changes observed between two surveys only and concludes that a one-foot depth interval is sufficient to be the standard representative surface sampling interval for the RI/FS. However discrete, shorter-term deepening or shallowing events that may have occurred within the observation period, and more importantly their magnitude, are not accounted for in these observations.*

Response: Appendix A has been updated and now includes an evaluation of observed bathymetric changes across three precision bathymetric surveys spanning the period from January 2002 through May 2003. A one-foot depth interval still captures the great majority (approximately 90%) of net riverbed elevation changes observed during this period of typical lower Willamette flows. Nonetheless, we do not disagree with the statement that "discrete, shorter-term deepening or shallowing events...may have occurred within the observation period", nor do we feel that larger magnitude elevation changes do not occur during more extreme hydrologic events. The proposed hydrodynamic and sediment transport modeling effort (Draft Technical Memorandum submitted to EPA in April 8, 2003; EPA comments received December 23, 2003; currently being revised) is designed, in part, to supplement the field observations and help address these issues. In addition, following review of the preliminary model efforts in 2004, additional data may be identified and collected to specifically address potential shorter-term sediment movement.

104. *Appendix A, Section 2.0, p. 1, Water Level Datums - The work plan and/or the FSP should include a discussion of the common datums and water levels (e.g., ordinary high water, mean high water) used in the Portland Harbor area.*

Response: The FSP has been revised to address this comment.

105. *Appendix A, Section 3.0, pgs. 2-4, Evaluation of Survey Elevation Difference - The evaluation of survey elevation difference maps should also discuss:*

- *If the observed changes fit the conceptual site model of the river;*
- *If the observed changes are consistent with known river velocities;*
- *What the period of bathymetric change is representative of (i.e., low water, <1 year flood event) [i.e., can the flow data (river stage and discharge measurements) during this period be compared to historical records to determine if this period is representative of low flow conditions or a <1 year flood event?]*
- *Areas of significant erosion or deposition. The magnitude of the observed change should be presented.*
- *The representativeness of historical surface sediment data (collected from the upper 15 centimeters).*
- *The text should present what areas of deepening are known to be associated with dredging activities and what areas are deepening due to river dynamics.*

Response: The FSP has been revised to address this comment.

106. *Appendix A, Section 4.0, p. 5, Representativeness of Historical Data - The conclusions should discuss the "representativeness" of historical data, based on the findings of this evaluation.*

Response: The FSP has been revised to address this comment.

107. *Appendix A, Tables 1a and 1b, Areas of Deepening- This table should present, to the extent possible, what areas of deepening are known to be associated with dredging activities and what areas are deepening due to river dynamics.*

Response: The FSP has been revised to address this comment.

108. *Appendix E, CD Presentation - The LWG should be commended for pulling together this CD presentation. The CD greatly enhanced the work plan and FSP. The LWG should be encouraged to continue to build on this presentation for subsequent plans and for presentation of the RI data as it is collected.*

Response: Comment noted.